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ABSTRACT

Information about the computerized Oregon Career Information System (CIS) and suggested strategies for implementing the system at the college and university level is provided in this handbook for higher education personnel (teacher educators, counselors, placement officers, and subject matter specialists). Topics discussed in the handbook include the following: (1) description and background of CIS; (2) applications of CIS university wide in the areas of teacher education, exploratory studies program, educational opportunities program, counseling and placement centers, subject matter areas, and others; (3) overview of the system and the eight system components; (4) staff development needs in the areas of location of the system, standards for use, service agreements, user's handbook, publicity to users, student interface and the computer terminal, and training assistants; (5) department, school, and college/university wide coordination with discussion of the role of the campus coordinator and cadre training. The final section, comprising the majority of the handbook, contains "recipes" of instructional materials, activities or guides to use in implementing CIS, outlined in terms of title, objective, time, materials and facilities needed, and methodology. Appendixes contain blank recipe sheets, standards for use, localized information, and numerical list of occupations. (TA)

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CAREER INFORMATION SYSTEM IMPLEMENTATION HANDBOOK

FOR COLLEGES AND UNIVERSITIES

June, 1977

School of Education
Oregon State University

in cooperation with

Career Education Personnel Development Project
Marion Intermediate Education District

and

Oregon Career Information System
University of Oregon

CE 014 801

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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This Handbook was developed pursuant to a grant from the Career Education Personnel Development Project. However, the opinions expressed herein do not necessarily reflect the position or policy of the Project and no official endorsement should be inferred. This Handbook is in its first printing and is subject to revision.

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TABLE OF CONTENTS

I. INTRODUCTION 1

PURPOSE OF THE HANDBOOK 1
WHAT IS CIS 1
BACKGROUND OF CIS 2
The Consortium and Board of Directors 2
Goals of CIS 2
Funding 2
CIS Staff 3

II. APPLICATIONS OF CIS 4

INTRODUCTION 4
CIS UNIVERSITY WIDE 4
Teacher Education 4
Exploratory Studies Program 4
Educational Opportunities Program 5
Counseling Center 5
Placement Center 5
Subject Matter Areas 5
Other Applications in a College/University Setting . . . 5

III. OVERVIEW OF THE SYSTEM 7

HOW THE SYSTEM WORKS 7
SYSTEM COMPONENTS 7
QUEST 7
Occupational Descriptions (DESC) 7
Bibliography of Occupational Books (BIB) 7
VISIT 7
CLUBS 7
Preparation (PREP) 8
Programs of Educational Training (PROG) 8
Schools (SCH) 8

IV. STAFF DEVELOPMENT 9

WHAT THE STAFF SHOULD KNOW 9
Why a System? 9
Location of System 10
Standards for Use 11
Service Agreements 11
User's Handbook 11
Publicity to Users 12
Student Interface and the Computer Terminal 12
Training Assistants 13

DEPARTMENT, SCHOOL, AND COLLEGE/UNIVERSITY WIDE COORDINATION . . . 13
Role of the Campus Coordinator 13
Cadre Training 14

RECIPES: ACTIVITIES FOR IMPLEMENTING CIS 15

APPENDICES

A. Blank Recipe Sheets

B. Standards for Use

C. Localized Information

D. Numerical List of Occupations

I

INTRODUCTION

PURPOSE OF THE HANDBOOK

Oregon colleges and universities have a responsibility to assist their studerts with educational and career planning. A comprehensive system, the Oregon Career Information System (CIS) exists to help with this task. Such a system is, however, a new idea in most colleges and universities. The purpose of this handbook is to provide higher education personnel (teacher educators, counselors, placement officers, and subject matter specialists) with information about CIS as well as suggested strategies for implementing the system at the college and university level. More detailed information about the system and its use in junior and senior high schools is available through publications printed by the CIS office.[1]

WHAT IS CIS?

CIS is an information system designed to rapidly and efficiently disseminate career information. This information is available, upon request by the user, through two delivery systems.

1. a computer-based system
2. a needle-sort system utilizing a card sorting process

CIS includes extensive labor market and occupational information about 241 carefully selected occupational fields defined to represent about 97 percent of Oregon's labor market. It also describes all post-secondary training programs in the state as well as extensive information on Oregon's two- and four-year colleges, technical/vocational, and proprietary schools. It supplies some of the information needed to facilitate the career decision making process.

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[1]Oregon Career Information System, 247 Hendricks Hall, University of Oregon, Eugene, Oregon 97403.

a) KEEPING IT GOING - Handbook for Implementing the Career Information System, September, 1976.

b) User's Handbook, CIS, 1977.

BACKGROUND OF CIS

During 1969 representatives from the Oregon Employment Division, the Oregon Department of Education, Oregon State University, the University of Oregon, and the Lane Intermediate Education District formed a consortium to develop an information system that could effectively serve students and clients in a variety of Oregon settings. Research and development procedures by members from this group led to a thorough review of system components and the feasibility of a career information system. Such factors as information development, delivery devices, in-service training, location, staffing, and resources for funding were considered.

By the spring of 1970, the group proposed that CIS be a model interagency consortium to provide practical means of direct access to current career and labor market information.

The Consortium and Board of Directors

Membership in the CIS consortium is by formal invitation. Current membership includes personnel from community colleges, intermediate education districts, local school districts, Oregon Employment Division, Oregon Corrections Division, Oregon Department of Education, and Oregon State System of Higher Education. Representatives from each agency and institution in the consortium comprise the Board of Directors. This Board establishes CIS policy, represents member institutions, and fosters statewide cooperation and program development.

Goals of CIS

CIS enhances the efforts of agencies and schools involved in occupational counseling and education by:

1. Collecting current labor market and educational information and making it accessible to persons of varying ability, experience, and interests.

2. Developing and managing CIS systems that deliver the information through various media.

3. Providing training for personnel at user agencies on effective use of career information in counseling and classroom programs.

Funding

Initial funding was provided in the fall of 1971 by the Manpower Administration of the U.S. Department of Labor. In 1973, CIS received an additional grant from the Fund for the Improvement of Post-Secondary Education. This grant was for the expansion of the system to include current information about Oregon

training programs, schools, and institutions. In-state monies primarily from user fees now provide support for continuing update, training workshops, user materials, and day-to-day operation of the system.

CIS Staff

The central staff of CIS is located in Hendricks Hall at the University of Oregon. Management of the system, communications within the consortium, and support of research and development are the responsibilities of the CIS Director. Two field representatives are employed to work closely with school, college, and agency staffs for the most effective implementation of the system. In addition, three to five researchers are continuously working to update and maintain the various labor market, education, and training files.

The members of the CIS staff, the Board of Directors, and the consortium agencies and institutions recognize that CIS is no better than the information contained within the system. Thus, a majority of the on-going work is designed to give the user practical and valid information concerning occupations and training and/or educational programs. The staff always welcomes additional information and/or ideas for improving information content.

II

APPLICATIONS OF OREGON CIS

INTRODUCTION

A student in college needs to make decisions regarding majors, educational plans, and vocational goals. Because the Oregon Career Information System is a library of occupational and educational information, it can be used to help students make decisions.

CIS UNIVERSITY WIDE

Teacher Education

On an individual basis, a student majoring in teacher, counselor, and/or administrator education has the need to make decisions about a personal program of study and ultimate professional goals. The student may need to decide whether to continue in education or to seek another career. Similarly, the student may need to make a decision on whether or not to change from one certification program to another. On a broader level, the implementation of a system such as CIS in schools of education contributes to the career counseling resources education students will need once they enter the schools. Teachers-in-training must learn how to help their students make tentative decisions about school and careers. Thus, pre-service teachers should be able to locate and retrieve educational and occupational information. A third justification for implementation of the system is that more than 325 Oregon junior and senior high schools are currently using the "Needle Sort" and/or computer terminal. All thirteen Oregon community colleges utilize the Career Information System. Therefore, if graduates of teacher education programs are to make a smooth transition to the work place, they must possess a working knowledge of the system.

Exploratory Studies Program

Exploratory studies programs are designed to be of service to those students who are undecided about their major field of study or who believe their current major may not be their final choice, and want the freedom to explore other areas without the restrictions of academic requirements of any school or college. Counseling and advising are emphasized. A staff of trained counselors and advisers are interested in helping students make career decisions. The "Occupational Needle Sort" and computerized version of CIS are viable means by which students can obtain information to help them with career decisions. Students can find out about programs of study and training, schools, and occupations.

Educational Opportunities Program

The Oregon Career Information System can provide assistance to special student groups who may or may not meet regular college or university admission requirements but who are regarded as having the potential to complete a college degree program. The system can provide these students with descriptions of job duties, specialties, working conditions, hiring requirements, employment outlook, fields of study, and schools.

Counseling Center

Educational-vocational counseling is among the many services provided by college and university counseling centers. Experienced personnel help students with:

-Selecting a major or vocational goal
-Evaluating personal interests, abilities, and personal characteristics
-Deciding on a new major if interest has been lost in the current one.

The Oregon Career Information System can provide the student and counselor with the kinds of information needed to make these and related decisions. There is current information on job tasks, working conditions, job requisites, and employment prospects. Students can also find out about schools, courses, teaching methods, and degrees.

Placement Center

As college and university students work toward graduation they need assistance in determining employment prospects and/or opportunities for further education. Because CIS has a data bank on Oregon employment trends (not job-openings) as well as statewide programs of study, the efforts of the placement office can be enhanced with the use of the system.

Subject Matter Areas

College students in all subject matter areas have decision making needs regarding majors, educational plans, and career development. Classroom activities that tie in the content of the subject matter with general career planning can be implemented by interested professors. As students move through their coursework, their vocational goals sometimes change. This often requires a shift in major and subsequent modification of educational plans. Accurate and readily accessible career information is essential to facilitate this decision-making process. Because the Career Information System possesses such data and the capacity to deliver this data, the system is a viable means of meeting student needs in all subject areas.

Other Applications in a College/University Setting

The Oregon Career Information System has been successfully used by several colleges in the state in the following ways:

-Included in a college's exhibit at a county fair as not only a resource for students at the school but also as an immediately available resource to the general public as they visited the exhibit and learned more about the school
-Featured as part of a service-oriented display at a local shopping center sponsored by a college to encourage passers-by to use the occupational and educational information in CIS
-Integrated into a college's orientation program for new students; among the many orientation activities, the CIS information (via a computer terminal) is made easily accessible to orientation participants interested in exploring a variety of major fields of study
-Highlighted in campus career fairs and other similar types of programs to give students an opportunity to look at occupational information for over 95 percent of the employment available in the state
-Computer terminals used at campus dormitory locations in conjunction with evening career development seminars.

III

OVERVIEW OF THE SYSTEM

HOW THE SYSTEM WORKS

The information files of CIS are accessible to the user/client by either of the two delivery systems. The computerized version of CIS is an interactive system in terms of the user/client a) giving commands via a remote terminal to access the desired file and b) responding to questions generated by the system. The files of the Needle-Sort System are computer printouts supplied to the user/client in book form.

The User's Handbook (pp. 24-25) contains information on a) how to access the CIS from a remote terminal, b) general program instructions, and c) commands to be used to request the various information files. The CIS information files are available from several computer systems in Oregon and slight variations exist in the manner of accessing CIS. Also, certain information files (e.g. VISIT) should be developed locally and may not be available on each of the computer systems.

SYSTEM COMPONENTS

The major components or information files of CIS are:

QUEST - an introductory questionnaire which assists the user/client to explore occupations related to self-assessed interests, aptitudes and personal preferences.

DESCRIPTION FILE - information on 241 occupations that represent over 90 percent of Oregon's employment. Each occupation in the file has a brief 300 word description of job duties, working conditions, hiring requirements, and employment prospects. These descriptions are continuously updated and are currently localized to seven geographic regions in the state.

BIBLIOGRAPHY FILE - information about the most pertinent publications for each occupation in the system.

VISIT FILE - names of local people available to discuss their respective occupations with interested individuals.

CLUBS - lists of career exploratory clubs in local areas of the state.

PREPARATION FILE - a statement for each occupation in the system including ways to prepare for the occupation, skills needed, licensing requirements and a cross-reference to appropriate post-secondary educational training. A list of high school courses that will help in preparing for a field of work (cluster) may also be generated by the user from this file.

PROGRAM FILE - information on post-secondary educational programs and training in Oregon. Users may access a particular program and receive a description of degrees offered, specialties, program objectives, courses, and a list of schools in Oregon that offer the program.

SCHOOL FILE - information on all of Oregon's two- and four-year colleges and universities and licensed proprietary institutions. Users may compare up to three schools at one time, selecting the information they want from a list of 65 different topics.

The information contained in these files enables users to discover which occupations suit their preferences, values, abilities, and which programs of training will enhance their career development.

IV

STAFF DEVELOPMENT

WHAT THE STAFF SHOULD KNOW

Effective use of the system requires an understanding of: system components, sources and use of information, mechanics of system use, and discussion of system applications within the particular setting. Staff who will use or be responsible for the use of the system in individual schools and agency offices must attend a training program which has been approved by CIS.

The following topics should be adequately discussed by CIS staff at all pre-service meetings with the staff of all schools and agencies new to the system.

Why a System?

There are many weak points in the delivery of occupational and educational information to individuals planning their careers but perhaps the most severe weakness is the almost total lack of efficient, functional, attractive systems by which unsophisticated users can access comprehensible information at locations, times, and in forms that are appropriate for them.

It is an often neglected fact that information is of no effect unless it reaches decision makers, yet individuals have had limited options for obtaining occupational and educational information. Students may elect to see a counselor; write to a professional or trade association for promotional literature; try to choose a current and factual library source; or they can forget the whole information gathering exercise as more trouble than it is worth and simply "ask around." The latter option may in fact be the rational choice; in any case, it is the predominant pattern, as many studies testify. In attempting to systematize the delivery of information, Oregon CIS has given explicit attention to both the information itself and the vehicles by which it is delivered.

The necessary features of an information delivery system for career planning are:

1. Make information easily accessible to persons of varying ability and experience.

2. Provide a means for integrating occupational and educational information with clients' interests, values, and aptitudes.

3. Display and/or deliver information in an attractive manner.

4. Provide accurate and current information, including a capacity for updating.

5. Supply local as well as national data.

6. Provide information concerning a wide variety of occupational groups.

7. Include such specific information as:
   a. job duties
   b. work environment
   c. hiring and training requirements
   d. terms of employment
   e. hours
   f. current labor market condition
   g. long range outlook
   h. education programs
   i. school and college environments

8. Function efficiently.

Location of System

The placement of the computer terminal or the Occupational Needle Sort System has proven to be one of the important factors affecting system use. Although the most appropriate location of the system must be determined by the school's staff, the following considerations should prove helpful:

1. Students should have easy access to the terminal or needle-sort. The most successfully used systems have been out where students can watch others accessing them, hear the noise from the computer terminals, and generally observe that the experience is both enjoyable and informative.

2. The location should be convenient for trained staff assistance. Several institutions have trained students as aides to assist users, thus freeing staff for counseling and other professional activities.

3. Computer terminals are often used to access other computer programs besides CIS. Institutions utilize terminals for problem solving, simulation games, on-line registration, research applications, as well as for the CIS computerized version. Consequently, terminal location may require a joint decision by several departments for its best utilization.

4. The Occupational Needle-Sort System, because of its mobility, could be utilized in a variety of settings (dorms, libraries, etc.), thus providing an opportunity for students to have more privacy in career exploration. This requires a "check-out" procedure, but has proven well worth the effort involved. Under the needle-sort rental agreement, CIS will replace materials that are lost.

Standards For Use

Any system has strengths and weaknesses, ways it can be effectively used and ways it can be abused. The CIS Board of Directors has established Standards For Use (see Appendix B) outlining the best uses of the computerized system and the Occupational Needle-Sort System. This set of "Standards" is intended to help user schools and agencies understand the system and to plan uses of the system that will complement other guidance and institutional activities.

Service Agreements

A set of "Standards" accompanies each written agreement that is established between the user institution or agency and the CIS. This written agreement clarifies both the responsibilities of the CIS and those incurred by the user institution. Agreements are re-established each year and have served to increase the staff's understanding of financial commitment, in-service training dates, and evaluation methods. It is recommended that the school's or agency's staff who is directly working with the system be familiar with both the "Standards" and the agreement.

User's Handbook

In the use of both the Occupational Needle-Sort and computerized system, the User's Handbook serves as the most available and reliable technical resource. The handbook contains the QUEST questionnaire, a complete list of the occupations, programs of training, and schools found in the system, and all necessary instructions for use of the system.

The needle-sort handbook outlines on the top of page 9 what the system's user must do in working his or her way through the needle-sort process. Students generally acquire the necessary skills needed to sort the cards very quickly. In group settings, two or three students can work with the needle-sort at one time. The person who has answered the questionnaire may be inserting the needle through the appropriate holes while another is picking up discarded occupations, studying them, and putting them back into the card box. CIS has found that persons often talk about the questions, call one another's attention to the discarded occupations and discuss the process. This interaction among the users working with the needle-sort appears to provide a good learning environment. After the person

has selected several occupations which interest him or her, the occupational cards direct them to read the appropriate occupational and educational descriptions. Many schools have added to the cards names of resource speakers, leaders of explorer posts, and other occupational exploration resources available in their local area.

The handbook used with the computer provides more technical detail on the use of the computer. Students and clients are given detailed instructions on page 24 on how to use the computer terminal. Experience has shown that most students are perfectly capable of following these computer terminal "log on" methods correctly and quickly. After they are into the system, the computer is programmed to give the necessary instructions for use. The instructions on page 25 provide an additional listing of special messages or options open to the user. It is helpful if the user becomes familiar with these special messages in the handbook so that he/she can use them while on the terminal.

Publicity to Users

The best publicity device to promote the system is a conspicuous location in the college or university. Experience shows that spectators become users.

Many approaches have been tried in introducing the system. The school's newspaper or agency's house organ is often a key link to good communication to a wide variety of potential users. In agencies, demonstrations to groups of clients have provided motivation for individuals to use the system. Notices on bulletin boards and announcements over public address systems also have been effective.

Student Interface and the Computer Terminal

Keep in mind that people using the terminal are normally not sophisticated computer people and therefore need assistance in using the equipment. Experience indicates that most users are not likely to seek help with the terminal when they need it; instead they either leave the system with unsatisfactory results or blunder along with a fair degree of frustration. Staff members should provide initiative in offering assistance and explanation to the user.

Several techniques have proven successful at college and university terminals:

1. Provide ample contact and orientation for the beginning user. Log-on procedures and use of the CIS User's Handbook need explanation by staff.

2. Leave those students alone who do not seem to want assistance. However, it is important to have aides easily accessible.

3. It is important to some students to have someone available who can spend time talking and providing assistance.

Training Assistants

Selecting the training assistants for the terminal is an important function. On most college campuses, work-study students and possible volunteers are available. These people can be trained to provide assistance.

Aides should be selected for their availability, their ability to work with people, and their interest in assisting people with finding career information.

Training the aides could begin with asking each person to become familiar with components of CIS and the operation of the computer terminal. The steps in training student assistants follow:

1. Explain CIS and its components fully, asking the aide to carefully study the CIS User's Handbook.

2. Ask the student aide to fill out the QUEST questionnaire, look at occupations, training programs, and schools.

3. Assist the student with log-in procedures with the computer terminal and access to CIS. It is helpful to attach a set of operating instructions to the terminal or in plain sight for the aide and users of the system.

   Then assist them with understanding QUEST, its operating instructions (i.e., WHY NOT, CHANGE), access to each of the information components, and how to log off. Encourage them to return to the terminal for another 30 minutes to an hour of experimentation.

4. A group follow-up session with all aides may be very constructive.

5. It is important to stress that an aide should not panic if a problem develops with the terminal. Instead, attempt to logically determine what may be wrong by reviewing operation steps.

DEPARTMENT, SCHOOL, AND COLLEGE/UNIVERSITY WIDE COORDINATION

Role of the Campus Coordinator

1. Develop a thorough familiarity of the system's (computer and/or needle-sort version) components.

2. Acquire an understanding of how these components work together as a system and how they can be used in various combinations for many purposes (see Standards For Use, Appendix B).

3. Develop a plan whereby the system can be made available most effectively to serve the guidance needs of all students or clients for whom it is intended.

4. Acquire an understanding of the system's Standards For Use.

5. Become familiar with the system's materials (i.e., user handbooks, occupational and education printouts, etc.) and how to obtain adequate supplies.

6. Develop the capacity and set aside the time to provide both technical and professional assistance to staff and students on system use.

7. Schedule and lead orientation for staff and students.

8. Communicate with CIS staff on problems encountered in the use of the system and suggest improvements.

9. Assist with the necessary budgetary and invoicing procedures to financially support CIS.

Cadre Training

Colleges and universities using CIS need trained, accessible people who will:

1. Inform educators and students about CIS.

2. Assist CIS staff with in-service training.

3. Assist CIS staff with the distribution of materials.

4. Coordinate yearly cooperative budgetary matters for CIS implementation.

5. Assist CIS staff with implementation, trouble-shooting, evaluation, and follow-up.

6. Give feedback to CIS staff about system improvements.

To address these functions, a cadre of college and university teachers. counselors, and administrators could be formed and trained.

V

RECIPES: ACTIVITIES FOR IMPLEMENTING CIS

"Recipes" in the context of the CIS implementation handbook are simply instructional materials, activities or guides to use in implementing the Career Information System. The recipes on the following pages have been written to complement the computerized version of CIS. However, each recipe can be easily adapted for those who wish to use the manual needle-sort version to access CIS information. These recipes are designed to give CIS users some new ideas for ways to get the most out of CIS in their institution or agency. For additional "Recipes" see the handbook, Keeping It Going, published by the Oregon Career Information System.

TITLE:

ARE YOU UNDECIDED ABOUT AN OCCUPATION?

OBJECTIVE:

To identify job titles which reflect your interests, aptitudes, and capabilities.

TIME:

45 to 50 minutes - orientation time
45 to 50 minutes - terminal time per student
45 to 50 minutes - class discussion of "QUEST" lists

MATERIALS & FACILITIES NEEDED:

CIS User's Handbook
CIS Terminal
Terminal log-in instructions

METHODOLOGY:

1. Secure enough CIS User's Handbooks for your students.
2. Obtain a computer user number and password for each of your students (these may be obtained from your computer center).
3. Instruct your students in the use of the "QUEST" portion of the User's Handbook. Remind students that Quest is not a test but instead is a way to sort occupations according to student's preferences.
4. Require that your students complete the (QUEST) questionnaire and review the instructions before attempting to use the computer terminal.
5. Instruct your students in the use of the computer terminal.
6. Provide assistance to students as they use the terminal.
7. Discuss "QUEST" lists either individually or in groups; remind students of the "Why Not" option in QUEST.
8. Encourage students to complete RECIPE #2.

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Career Information System No. 2

TITLE:

LOOKING AT CAREER PREPARATION

OBJECTIVE:

To see how people prepare for a selected occupation.

TIME:

15 minutes - orientation/assignment
15 minutes - terminal time per student
20 minutes - discussion

MATERIALS & FACILITIES NEEDED:

CIS User's Handbook
CIS Terminal
Terminal log-in instructions

METHODOLOGY:

1. Provide students with instruction on how to use the Handbook and computer terminal. Point out the list of CIS occupations on page 7 of the Handbook.

2. Require that each student select one occupation that interests him/her (use DESC file for occupational information) and then determine how people prepare for the occupation (use PREP file).

3. Looking at the "skills" section of the preparation statement, have students discuss how these skills can be developed. Are they being developed formally in school programs that students are familiar with or informally in some way?

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TITLE:

CHANGING YOUR MAJOR
by Paul Franklin CIS Eugene, Oregon

OBJECTIVE:

To assist entering college students in determining what major they want to pursue.

TIME: Continuous activity

MATERIALS & FACILITIES NEEDED:

CIS Computer Terminal and/or Needle-Sort and CIS User's Handbooks (if Needle-Sort is used, accompanying printouts of occupational, program, and school information can be unstapled and put in a loose-leaf notebook so that students may make copies of information they wish to take to their advisers).

METHODOLOGY:

Entering freshmen or undergraduates with undeclared majors, unsure of what program or major they want to pursue, can be referred to CIS - either Needle-Sort or computerized version. Students can explore in more detail programs of study (PROG) in which they may have some interest.

1. Have students pick a Program file of interest from the alphabetical list on page 14 in the User's Handbook. If students are unsure about whether or not their school offers a particular program, have them look up their school's code number in the User's Handbook and ask for appropriate school topics that describe programs' availability (topics 6-63).

2. Give the students enough time to read through the Program files they select. By accessing the narrative descriptions in the Program file for one or more programs of study that interests them, students may gain a better insight into the programs and be better able to select classes and eventually to declare a major. Students also should be encouraged to use other information files in CIS (such as the occupational descriptions and QUEST) if they desire.

3. After using CIS, students may take their information printout to a counselor or adviser and confer about program and course selection.

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Career Information System No. 4

TITLE:

ASK THE COMPUTER ABOUT SCHOOLS

OBJECTIVE:

To identify general information, programs of study, admissions requirements, housing, costs, services of selected post-secondary schools.

TIME:

30 minutes - orientation time
50 minutes - terminal time per student
50 minutes - discussion

MATERIALS & FACILITIES NEEDED:

CIS User's Handbook
CIS Terminal or SCH (School) Printout
Terminal Log-In Procedures

METHODOLOGY:

1. Provide students with instruction on how to use the Handbook and computer terminal. Point out the list of schools on page 19 of the Handbook and school topics on page 23.

2. Have each student select at least three post-secondary schools and compare the costs and services of each one.

3. (Option) Prepare a chart, graph, or similar illustration that illustrates these comparisons.

4. Conduct a class discussion on the information received from the system.

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TITLE:

CAREERS IN ENGINEERING

OBJECTIVE:

To obtain a description of job duties, specialties, working conditions, hiring requirements, and employment prospects for careers in engineering.

TIME:

30 minutes - orientation and time to fill out QUEST questionnaire
20 minutes - terminal time per student
30 minutes - discussion

MATERIALS & FACILITIES NEEDED:

CIS User's Handbook
CIS Terminal
Terminal Log-In Instructions

METHODOLOGY:

1. Acquaint students with the CIS User's Handbook and the computer terminal's operation.

2. If students are engineering majors, have them fill out QUEST according to their interests. If the students are in pre-engineering or just thinking of an engineering major, have them fill out QUEST like they think an engineer might answer the questions.

3. At the end of QUEST, have all students fill in the following occupations as ones that interest them, in addition to any others that they may find interesting:
   Engineers - DESC 2354
   Engineering Technicians - DESC 2356

4. When students get their list of occupations, have them check to see if the engineering occupations are listed. If not, have the computer tell them why not by typing in "Why Not" and the occupation's code number.

5. Students may wish to discuss characteristics of occupations in engineering. (Extra time may be included to access the occupational descriptions and preparation statements for further discussion of these occupations and others.)

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TITLE:

CAREERS IN EDUCATION

OBJECTIVE:

To identify the job duties, specialties, working conditions, hiring requirements, and employment prospects for educators.

TIME:

15 minutes - orientation time
30 minutes - terminal time per student
20 minutes - discussion

MATERIALS & FACILITIES NEEDED:

CIS User's Handbook
CIS Terminal
Terminal Log-In Procedures

METHODOLOGY:

1. Acquaint students with the CIS User's Handbook and operation of the computer terminal.

2. Have each student get the occupational description and preparation statement for the following:

   2.1 Education Administrators - 1136
   2.2 Education Program Specialists - 8458
   2.3 Teacher Aides - 1422
   2.4 Teacher, Elementary and Secondary - 8456
   2.5 Teachers, University and College - 8454
   2.6 Counselors - 8414

3. Have students prepare a paper that describes the employment prospects for each of the six groups and that comments on the skills needed for each of the occupations.

4. Discuss these papers ir class.

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Career Information System No. 7

TITLE:

CAREERS IN BUSINESS ADMINISTRATION

OBJECTIVE:

To identify job duties, specialties, working conditions, hiring requirements, and employment prospects for business administration occupations.

TIME:

30 minutes - orientation time
60 minutes - terminal time per student
120 minutes - discussion

MATERIALS & FACILITIES NEEDED:

CIS User's Handbook
CIS Terminal
Terminal Log-In Procedures

METHODOLOGY:

1. Acquaint students with the CIS User's Handbook and the operation of the computer terminal.

2. Have each student get a description (DESC) and preparation statement (PREP) for the following:

   2.1 Small Business Operators - 1142
   2.2 Hotel or Motel Managers - 1132
   2.3 Public Administrators - 1138
   2.4 Business Executives - 1144
   2.5 Business Managers - 1146
   2.6 Personnel Officers - 1186
   2.7 Sales and Service Managers - 1162
   2.8 Production Superintendents - 1154
   2.9 Securities Salespeople - 7415
   2.10 Accountants and Auditors - 1614
   2.11 Business Services Salespeople - 7422
   2.12 Buyers and Purchasing Agents - 1184
   2.13 Insurance Salespeople - 7416
   2.14 Loan Officers - 1636

3. Ask each student to prepare a paper that describes the skills needed and interesting characteristics for one of these occupations.

4. Discuss these papers in class.

TITLE:

USING CIS WITH THE STRONG-CAMPBELL INTEREST INVENTORY
by Bruce McKinlay and Donna Johnson CIS Eugene, Oregon

OBJECTIVE:

To identify occupational information pertaining to the Strong-Campbell Interest Inventory

TIME: About one hour

MATERIALS & FACILITIES NEEDED:

An individual's Strong-Campbell Interest Inventory Interest Profile Form
Printed CIS Occupational Information (User's Handbook needed for computer version)

METHODOLOGY:

This activity is designed to permit people who have recently completed the Strong-Campbell Interest Inventory and who have their SCII profile form to obtain current information about the occupations. The counselor, after explaining the individual's SCII results, may wish to use the following procedures.

1. Have the person select several interesting occupations (e.g., occupations that rated high, or surprisingly low) from his or her SCII profile form.

2. Using the CIS User's Handbook, have the person identify the CIS occupational designations.

3. The person can use the occupational code number to locate a specific occupation in CIS and then examine the occupational information (job duties, outlook, wages, etc.) in the CIS files. (Computer users will need operating instructions from the back of the CIS User's Handbook. Computer users first type their name on the computer terminal's keyboard. Then the computer instructs them to type in either QUEST or INFO; at this point the user can type in DESC and the occupation code number to get immediately into the occupational information files.)

SCII/CIS CONVERSION TABLE

OCCUPATIONAL INFORMATION RELATED TO THE STRONG CAMPBELL INTEREST INVENTORY (SCII)

Current occupational information is available through the Career Information System for occupations listed on Strong Campbell Interest Inventory (SCII) Report Forms. See the CIS occupational descriptions indicated below:

Strong-Campbell Occupational Criterion Groups	Corresponding CIS Occupations	
Accountant (f,m)	1614	Accountants & Auditors
Advertising Executive (f,m)	1162	Sales & Service Managers
	1195	Public Relations Workers
	4724	Commercial Artists & Designers
	7422	Business Services Salespeople
Agribusiness Manager (m)	4164	Farmers & Farm Managers
	1162	Sales & Service Managers
	1142	Small Business Managers
Air Force Officer (m)	1172	Military Officers
Architect (m)	2316	Architects
Army Officer (f,m)	1172	Military Officers
Art Teacher (f)	8456	Elementary & Secondary Teachers
	4724	Commercial Artists & Designers
Artist (f,m)	5982	Handcrafters
	4724	Commercial Artists & Designers
Banker (f,m)	1636	Loan Officers
	1144	Business Executives
Beautician (f)	8186	Cosmetologists
Biologist (m)	2624	Physical Scientists
	8454	University & College Teachers
Business Education Teacher (f,m)	8456	Elementary & Secondary Teachers
Buyer (f,m)	1184	Buyers & Purchasing Agents
Cartographer (m)	2364	Draftsmen
Chamber of Commerce Executive (m)	1195	Public Relations Workers
Chemist (f)	2624	Physical Scientists
Chiropractor (m)	8122	Chiropractors
College Professor (f,m)	8454	University & College Teachers
Computer Programmer (f,m)	1684	Programmers & System Analysts
Computer Sales (m)	7422	Business Services Salespeople
Credit Manager (f,m)	1636	Loan Officers
Dental Assistant (f)	8176	Dental Assistants
Dental Hygienist (f)	8174	Dental Hygienists

Strong-Campbell Occupational Criterion Groups	Corresponding CIS Occupations
Dentist (f,m)	8113 Dentists
Department Store Manager (m)	1162 Sales & Service Managers
Department Store Sales (f)	7454 Salespersons
	7484 Sales Clerks
Dietitian (f,m)	8116 Dietitians
Director Christian Education (f)	1136 Education Administrators
Elementary Teacher (f,m)	8456 Elementary & Secondary Teachers
Engineer (f,m)	2354 Engineers
English Teacher (f,m)	8456 Elementary & Secondary Teachers
Entertainer (f)	9866 Performing Artists
Executive Housekeeper (f)	3456 Domestic Service Workers
Farmer (m)	4164 Farmers & Farm Managers
Flight Attendant (f)	7856 Flight Attendants
Forester (m)	4124 Foresters
	4128 Forestry Technicians
Funeral Director (m)	8182 Morticians
Guidance Counselor (f,m)	8414 Counselors
Highway Patrol Officer (m)	9414 Law Enforcement Officers
Home Economics Teacher (f)	8456 Elementary & Secondary Teachers
Instrument Assembler (f)	5686 Electronics Assemblers
Interior Decorator (f,m)	2366 Decorators & Designers (Interior)
Investment Fund Manager (m)	7415 Securities Salespeople
Language Interpreter (f)	No Corresponding Occupation
Language Teacher (f)	8456 Elementary & Secondary Teachers
Lawyer (f,m)	8432 Lawyers
Librarian (f,m)	7164 Librarians
Life Insurance Agent (f,m)	7416 Insurance Salespeople
Mathematician (f,m)	2332 Mathematicians & Statisticians
Math-Science Teacher (f,m)	8456 Elementary & Secondary Teachers
Medical Technologist (f,m)	2654 Health Technicians/Technologists
Merchant Marine Officer (m)	1172 Military Officers
	11722 Naval Officers
Minister (m)	8436 Clergy
Musician (f,m)	9866 Performing Artists
Navy Officer (m)	1172 Military Officers
	11722 Naval Officers
Nurse, Licensed Practical (f,m)	8164 Licensed Practical Nurses
Nurse, Registered (f,m)	8162 Registered Nurses
Occupational Therapist (f)	8126 Health Therapists
Optometrist (f,m)	8115 Optometrists
Personnel Director (m)	1186 Personnel Managers
Pharmacist (f,m)	8124 Pharmacists
Photographer (m)	4734 Photographers
Physical Education Teacher	8456 Elementary & Secondary Teachers
Physical Scientist (m)	2624 Physical Scientists
Physical Therapist (f,m)	8126 Health Therapists
Physician (f,m)	8112 Physicians
Physicist (f)	2624 Physical Scientists
Police Officer (m)	9414 Law Enforcement Officers
Priest (m)	8436 Clergy
Psychologist (f,m)	8418 Psychologists

Strong-Campbell Occupational Criterion Groups	Corresponding CIS Occupations	
Public Administrator (m)	1138	Public Administrators
Purchasing Agent (m)	1184	Purchasing Agents & Buyers
Radiologic Technician (f)	2654	Health Technicians/Technologists
Realtor (m)	7417	Real Estate Salespeople
Recreation Leader (f,m)	8486	Recreation Leaders
	8488	Recreation Aides
	8482	Recreation Program Directors
Reporters (f,m)	2176	Writers & Editors
Sales Manager (m)	1162	Sales & Service Managers
School Superintendent (m)	1136	Education Administrators
Secretary (f)	1412	Secretaries
	1412	Stenographers
Skilled Crafts (including carpenters, electricians, tool & die makers) (m)..	4254	Carpenters
	5626	Electricians & Electrical Repairers
	5462	Tool & Die Makers
Social Science Teacher (f,m)	8456	Elementary & Secondary Teachers
	2144	Social Scientists
	21442	Sociologists
Social Worker (f,m)	8416	Caseworkers
Speech Pathologist (f,m)	8128	Speech Pathologists/Audiologists
Veterinarian (f,m)	8114	Veterinarians
Vocational Agriculture Teacher (m) ...	8454	University & College Teachers
	8456	Elementary & Secondary Teachers
YMCA Staff (f)	8486	Recreation Leaders
	8482	Recreation Program Directors

Source: "Descriptions of the Occupational Criterion Groups (Appendix C), Manual for the Strong-Campbell Interest Inventory, Stanford University Press, 1974, pp. 92-98.

Career Information System
January, 1976

TITLE:

FINDING A SUMMER JOB

OBJECTIVE:

To identify resources such as directories with information relating to summer jobs and to brainstorm ideas for finding a summer job.

TIME: One hour

MATERIALS & FACILITIES NEEDED:

CIS Terminal
Terminal Log-In Instructions

METHODOLOGY:

1. Log-in to computer terminal and ask for the summer job file by typing "EMPLY 1000" when the terminal asks you your name.

2. There are three sections to the file: hints for your job search, books about summer jobs in the U.S., and books about jobs overseas. Select the parts of the file that interest you.

3. With the information from the CIS file as a starting point, outline your plan for beginning a search for a summer job. Be specific about steps you will take, additional research you may wish to make and job leads you can run down.

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TITLE:

TRAINING STUDENT AIDES TO ASSIST WITH CIS
by Sue Taylor Highland Park Intermediate School Beaverton, Oregon

OBJECTIVE:

To train student aides to assist students in the use of CIS information files and the computer terminal.

TIME:

Two sessions - one hour each
Follow-up sessions - 15 to 30 minutes

MATERIALS & FACILITIES NEEDED:

Computer terminal and user number and password to access CIS
Paper, ribbons and supplies supplied by in-house computer facility
Forms for follow-up (see following page)

METHODOLOGY:

Session 1 (1 hours)

Familiarize aides with basic operation of computer terminal, log-in procedures, on-line procedures. Ask each to log on to CIS program.

Run each aide through program.

Familiarize aides with changing answers, WHY NOT, asking for DESC, PREP, PROG, SCH, CLUBS and BIB files.

Session 2 (1 hour)

Assisting - the aides are asked what they would do in certain situations - how they would guide others. Ask them questions such as:

a. What if the student receives no occupations?
b. What if the student receives 150 occupations?
c. Have the aides encourage students to ask for DESC, PREP, PROG, SCH, CLUBS and BIB files.
d. Make sure the aides have a knowledge of what questions limit the student's occupation choices.
e. Encourage aides to be enthusiastic about the job they are doing and encourage others to use CIS.

Follow-Up Sessions

Have each aide fill out short follow-up form on each student (see attached). Meet with the aides at the end of every day for the first week to discuss the day's activities. This could continue regularly until you feel the aide has a good rapport with the students. Meetings could then be decreased to once a week.

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No. 10 a.

Aide: _____

Date: _____

Student Name _____

1. How many occupations printed out? _____

2. Which files did the student you were assisting use? (Check the ones used.)

DESC _____	QUEST _____
PREP _____	BIB _____
PROG _____	WHY NOT _____
SCH _____	CHANGE _____
CLUBS _____	

3. Comments on student attitude toward program:

4. General comments:

TITLE:

CAREER DEVELOPMENT AND INFORMATION SERVICES
(COUNSELOR EDUCATION PROGRAM)

OBJECTIVE:

To become familiar with the various information files of CIS.

TIME:

60 minutes - orientation to CIS and computer terminal
120 minutes - terminal time
120 minutes - discussion- evaluation

MATERIALS & FACILITIES NEEDED:

CIS User's Handbook
CIS Terminal

METHODOLOGY:

Investigate CIS as One Source of Career Information

1. Turn in a printout from the CIS computer QUEST in which you have selected an occupation for yourself in one of the districts (QUEST gives you a choice of locations in Oregon). Make sure the computer rejects you for the occupation you choose at least once so you may make the compromises necessary for you to get the job you want.

2. Make sure you have the following information, either from CIS or some other source.
   a. an explicit description of the job or occupation which answers (1) what? (2) why? (3) how?
   b. work performed
   c. worker requirements
   d. training and methods of entry
   e. specify vocational preparation
   f. aptitudes
   g. temperament
   h. physical demands
   i. 3 or 4 suggestions for related work

   If the answers are not available on the CIS, they are available in the DOT or other sources.

3. Find the same information from three (3) other sources other than CIS on the problems given you.

   You need not repeat the information from each source unless it is different or additional.

4. Select three sources of information which you would choose as a reference most desirable for your agency for different kinds of activities such as:
   a. college placement
   b. placement not involving college
   c. apprenticeships
   d. military service
   e. self employment

Sources of Information:

Library
Career Planning and Placement
Counseling Center
Learning Resource Center
High School Counseling Centers
Community College Counseling Centers
Materials for Information Services - (11 page handout listing references)
Oregon Career Information Service

Use CIS to Respond to 5 of the 10 Questions Listed Below

1. "I want to major in engineering but can't make up my mind between several schools. Can you help me evaluate their programs and pick out the major points to consider?"

2. "I want to be a beautician. What requirements are there for this job? I was told that you must have a state license. Is this true? If so, what must I know and where does one apply? What salary can I expect? Is there a school in Oregon where I can get training in this field? I don't want to leave the state."

3. "I want to major in home economics in college, and I am considering graduate work. Which schools offer an undergraduate degree in this area? In case I decide to take my graduate work at another institution, which schools offer graduate degrees? I want to remain in the northwest."

4. "The job of stewardess has always seemed exciting and adventurous. Where do I apply for this job? Do I have to have a high school diploma? Is college training required or helpful? Do you get training after being hired?"

5. "I am from a small town and my father expects me to take over his mortuary when I finish school. I am interested in building a chain of mortuaries and want the best schooling I can get. Where should I go?"

6. "I am interested in languages and intend to major in Russian. A friend told me that jobs are unlimited in this area. What could I do with a major in Russian?"

7. "I like to do things with my hands and have decided to get a job as either a plumber or an electrician. What types of apprenticeships are required, what salary will I get while training and when I am on my own, is union membership necessary or does it have certain advantages, and are you always assured of work?"

8. "I want a job in the health professions. What occupations are there which don't require the long schooling that an M.D. must have and yet occupations in which I can make a good living? What are these occupations, where are schools located for training, and what are their requirements?"

9. "I don't want to pay out-of-state tuition and will go to school in Oregon. We don't have a lot of money, so every penny counts. What will be the cost of one year at University of Oregon, Oregon State University, Southern Oregon College, Oregon College of Education?"

10. "I know that there are all kinds of jobs in social work. What are they and what are they about? What training is required?"

APPENDICES

Career Information System **No.**

TITLE:

OBJECTIVE:

TIME:

MATERIALS & FACILITIES NEEDED:

METHODOLOGY:

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Career Information System No.

TITLE:

OBJECTIVE:

TIME:

MATERIALS & FACILITIES NEEDED:

METHODOLOGY:

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APPENDIX B

Career Information System

Office of the Director
247 Hendricks Hall
University of Oregon
Eugene, Oregon 97403
(503) 686-3872

STANDARDS FOR USE OF THE CAREER INFORMATION SYSTEM

The Career Information System (CIS) has the responsibility for providing practical means of direct access to current labor market and educational information in forms which are meaningful to individual students and clients and for encouraging integration of such information into schools and social agencies. Two of the methods available through CIS are the computerized version and the manual Occupational Needle-Sort System.

Both systems are good tools, but, like most tools they are designed to do a particular kind of job. This set of "Standards" is intended to help user schools and agencies use the System appropriately and to plan uses that will complement their other activities.

The purpose of the Career Information System, as the name implies, is to make occupational and educational information more accessible for career exploration. To achieve this end, the CIS;

--utilizes delivery systems that can be operated by inexperienced students and other individuals. Anyone who can follow a simple set of instructions can operate the system.

--updates information immediately as new or revised data become available.

--provides in-service training to coordinators in sponsoring agencies.

--establishes a statewide cooperative to reduce costs and insure quality information to individual schools and agencies.

The delivery system consists of several semi-independent components, so they have a certain built-in flexibility to adapt to different user needs and different institutional resources. The basic components are:

QUEST: Helps users identify occupations to explore and helps them locate appropriate types of information about occupations. (Computer and needle-sort versions available.)

DESCRIPTION: Brief, 300-word summaries about each of the occupations in the System covering 95 percent of the area's employment and some not found locally (teletype and pre-printed printouts are available).

PREPARATION: Describes ways to prepare for occupations.

PROGRAMS OF EDUCATION AND TRAINING: Describes all types of educational programs and lists programs in all types of post-secondary educational institutions (teletype and pre-printed printouts are available).

SCHOOLS: Present comparable data about services and costs of two- and four-year and proprietary post-secondary educational institutions (teletype and pre-printed printouts are available).

CLUBS: Lists career Explorer posts and Junior Achievement organizations.

VISITS: Gives the names of people for personal discussion about their occupation (available only in areas with local sponsors).

The System has been systematically tested in schools, social agencies and shopping centers and is now in widespread use in educational institutions. (Copies of the individual evaluation reports are available on request.)

Among other things, these tests and operating experiences indicate certain rules for effective use of the System.

Rules for System Use

1. The following table indicates ways in which System components can be used to meet particular needs. Prospective user institutions should analyze their needs to determine which purposes they want the System to serve.

USES OF CIS COMPONENTS

TYPE OF USE	Principal Component	Other Required Components	Optional Additional Components
1) Identification of Occupations for Exploration	QUEST	DESCRIPTIONS BIBLIOGRAPHY PREPARATION	VISITS CLUBS
2) Introduction to Occupations	DESCRIP-TIONS	BIBLIOGRAPHY PREPARATION	VISITS CLUBS
3) Introduction to Educational & Training Opportunites	PROGRAM	SCHOOLS PREPARATION DESCRIPTIONS	VISITS CLUBS BIBLIOGRAPHY
4) Counselor's Reference to Selected Career Materials	BIBLIOGRAPHY		DESCRIPTIONS PROGRAMS SCHOOLS
5) Post-Secondary Schools Informa-tion	SCHOOLS		PROGRAMS

The requirements listed in the preceding table are based on experience which has shown, for instance, that the QUEST questionnaire and list of occupational titles should not be used by itself. The questionnaire contains several pertinent occupation selection criteria, but other information, for instance job opportunities and licensing requirements, is essential to a sound occupational choice. Users must have access to and be encouraged to use some additional material--descriptions, books, visits, etc. -- to get information about the occupations they want to explore. Any institution using the QUEST part of the System must plan to utilize at least the DESCRIPTIONS, BIBLIOGRAPHY, and PREPARATION statements.

2. Batch processing of the QUEST questionnaire, whereby students receive only a printout of their QUEST list without an opportunity to make CHANGE, inquire WHY NOT, and immediately retrieve descriptive information about the occupations, is not authorized. A school or agency that desires to use this process should obtain prior authorization from the CIS Director of User Serivces.

3. Institutions should incorporate the System into ongoing courses and counseling practice, wherever appropriate and feasible.

It is advantageous, though not required, that they also make the System available for independent student/client use. Experience has proven that the System receives effective use when it is open to independent client/student usage, but its resources should also be integrated into ongoing instructional and couseling programs. A CIS publication, Keeping It Going -- a handbook for implementing The Career Information System, is available to aid in this process.

4. In-service training of staff is a prerequisite to use of the System. Effective use of the System requires an understanding of: System components, sources and use of information, mechanics of System use, and discussion of System applications within the particular setting. Staff who will use or be responsible for the use of the System in individual schools and agency offices must attend a training program which has been approved by the CIS.

5. Each user institution should designate one person as the coordinator for the institution. This will provide a contact point for communication between the institution and the CIS staff.

6. Current local, regional, and national occupational and educational information is at the heart of the System. Providing inaccurate or outdated information is a serious misuse of the System and a disservice to people. User schools and agencies must support research costs of CIS, which operates the information maintenance program for the System. (Design of the System was financed by various grants, so user agencies are not charged for any of the initial development costs. However, operating costs must be borne by user institutions.) These costs will include:

For the Computerized Career Information System	For the Occupational Needle-Sort System
- CIS Services -	
I. appropriate printed materials (user's handbooks, Implementation handbook, etc.)	I. appropriate printed materials (user's handbooks, Implementation handbook, etc.)
II. share of updating costs (continuous information maintenance and system modifications)	II. share of updating costs (continuous information maintenance and system modifications)
III. agency staff training and program evaluation	III. agency staff training and program evaluation
- Delivery Devices -	
IV. operating costs (computer terminal rental or purchase, computer time charge) installation telephone and connection	IV. rental of needle-sort cards, box, and needle; DESC, PROG, and SCHOOLS printouts

7. CIS materials are copyrighted and remain the property of the Oregon Career Information System. They may not be duplicated by user agencies without the written approval of the CIS Director.

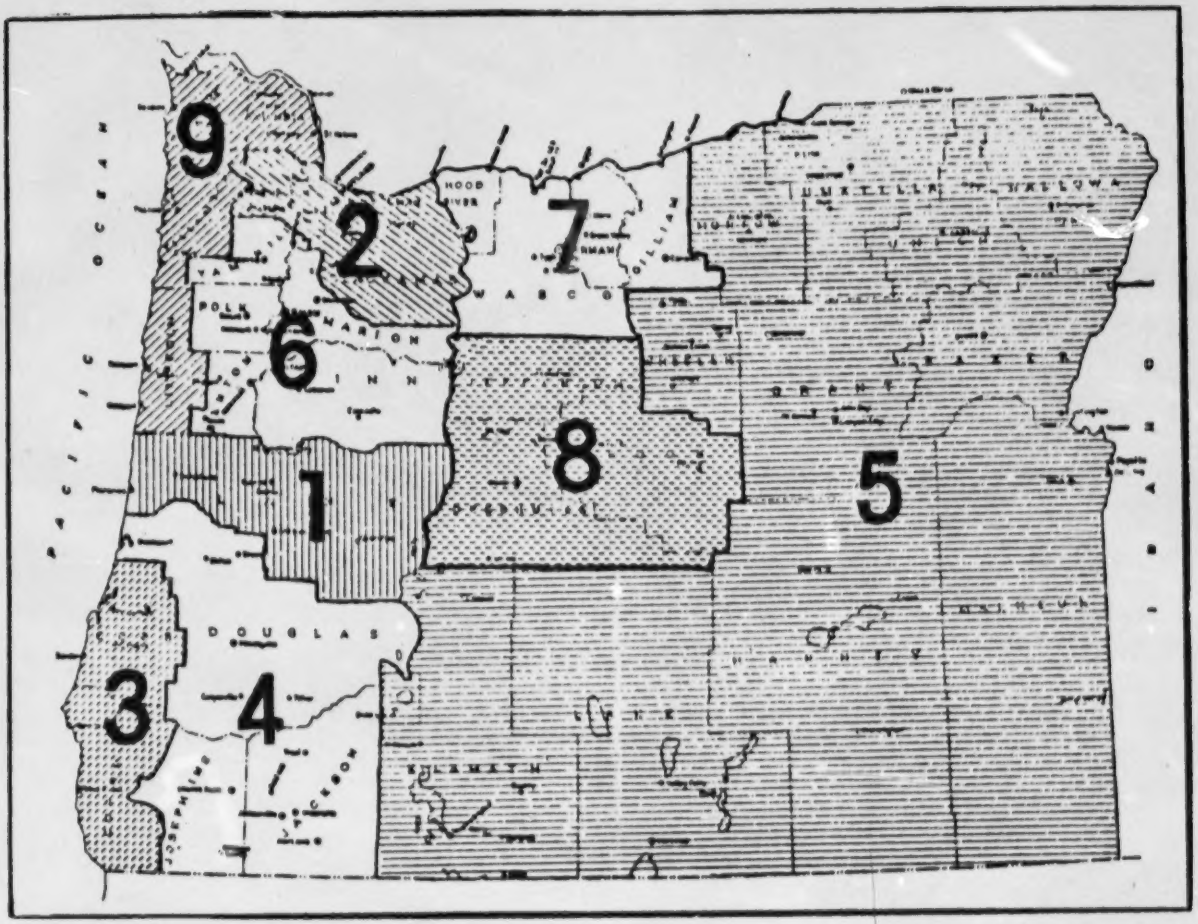
8. User agencies must provide adequate delivery devices to serve their clientele. Experience indicates that one terminal per 1200 users and one needle-sort per 200 users are optimum.

9. Both computerized and needle-sort systems are still being modified, and new applications may be tested. Experimentation is encouraged, provided it is conducted with evaluation and with approval by CIS staff. However, the above requirements have proven to be essential, and any institution using the systems must observe these requirements unless other arrangements are made in advance. Unauthorized departure from these standards will be viewed as a breach of the agreement and will result in termination of System availability.

Revised 11/71
Adopted by CIS Board 11/15/71
Revised and Adopted 8/73
Revised 9/75
Revised 7/76
CAREER INFORMATION SYSTEM

APPENDIX C

LOCALIZED INFORMATION



The above map represents the state of Oregon divided into nine geographic areas, designed to effect and economize the task of localizing labor market information by the Career Information System. The basic plan was developed through the cooperative efforts of Mike Shadbolt, former CIS Information Development Manager, and the Oregon State Employment Division Manpower Economists. Together, they reached consensus about grouping specific counties to facilitate CIS's labor market research activities without markedly reducing overall quality of the CIS occupational descriptions.

The boundaries of these areas take into account the 14 Administrative Districts as defined by the Governor's office and the State Economic Areas defined by the Census Bureau. They are based upon distinct geographic and economic factors.

Career Information System

Office of the Director
247 Hendricks Hall
University of Oregon
Eugene, Oregon 97403

NUMERICAL LIST OF OCCUPATIONS
COORDINATOR'S HANDBOOK

--Effective to July 1977--

The user may obtain this list of CIS occupations in either the computer or the needle-sort delivery system.

-- Using the computer, type DESC and the first two digits of the code number of the occupational group that interests you (e.g., administrative occupations--DESC 11), then hit the return key. You will obtain a numerical list of all of the occupations in that occupational group.

-- Using the needle-sort system, look in the occupational description printout for the colored pages at the beginning of each occupational group for the appropriate numerical list.

11 ADMINISTRATIVE OCCUPATIONS

(General Administrative)

1132 Hotel and Motel Managers
1134 Health Service Administrators
1136 Education Administrators
1138 Public Administrators
1142 Small Business Operators
1144 Business Executives
1146 Business Managers
1152 Construction Superintendents
1154 Production Superintendents
1162 Sales and Service Managers
1172 Military Officers
11722 Naval Officers

(Administrative Staff)

1184 Buyers and Purchasing Agents
1186 Personnel Officers
1195 Public Relations Workers

14 CLERICAL OCCUPATIONS

(General Clerical)

1411 Office Managers
1412 Secretaries
1414 Stenographers
1415 Shorthand Reporters
1416 Clerk Typists
1418 General Office Clerks
1422 Teacher Aides
1424 Travel Agents

(Reception)

1452 Receptionists
1454 Telephone & Telegraph Operators
1456 Messengers

16 BOOKKEEPING-ACCOUNTING OCCS.

(General Accounting)

1614 Accountants and Auditors
1616 Bookkeepers

(Credit and Collection)

1634 Appraisers and Underwriters
1636 Loan Officers
1642 Cashiers and Bank Tellers
1646 Railroad Clerks

(Data Processing)

1684 Programmers & Systems Analysts
1686 Computer Operators
1688 Keypunch Operators

(Other Office Machine Operators)

1692 Office Machine Operators

21 SOCIAL RESEARCH & PLANNING OCCS.

2144 Social Scientists
21442 Sociologists
21444 Economists
2174 Freelance Writers
2176 Writers and Editors

23 ENGINEERING & DESIGN OCCUPATIONS

(Planning)

2314 Land Use Planners
2316 Architects
2318 Ecologists

(Math)

2332 Mathematicians & Statisticians

(Engineering)

2354 Engineers
2356 Engineering Technicians

(Drafting)

2364 Draftsmen
2366 Interior Designers & Decorators

26 LABORATORY OCCUPATIONS

2624 Physical Scientists
2626 Earth Scientists
2628 Soil Scientists
2644 Opticians
2654 Health Technicians/Technologists
2655 Dental Laboratory Technicians
2656 Laboratory Testers
2672 Quality Control Inspectors
2674 Sanitarians

31 MECHANICS OCCUPATIONS

(Mobile Equipment)

3112 Automobile Mechanics
3114 Truck & Heavy Equip. Mechanics
3116 Aircraft Mechanics
3118 Small Engine Repairers
3124 Service Station Attendants
3126 Oilers

(Heavy Machinery)

3142 Millwrights
3146 Heat & Cooling System Mechanics

(Small Machinery)

3164 Office Machine Repairers
3166 Telephone Installers-Repairers
3168 Radio and TV Repairers
3169 Appliance Repairers

31 MECH. OCCS. (Cont.)

(Instruments)

3184 Jewelers
3186 Instrument Repairers

34 BUILDING MAINTENANCE OCCS.

(Commercial Building)

3422 Building Maintenance Workers

(Cleaning)

3454 Room Cleaners
3455 Janitors
3456 Domestic Service Workers

41 AGRICULTURAL & FORESTRY OCCS.

(Forestry)

4124 Foresters
4126 Fish and Wildlife Specialists
4128 Forestry Technicians

(Horticulture)

4144 Groundskeepers and Gardeners
4146 Floral Designers

(Commercial Agriculture)

4164 Farmers and Farm Managers
4166 Farm Workers
4168 Seasonal Farm Laborers

42 CONSTRUCTION OCCUPATIONS

4242 Painters
4244 Plasterers & Drywall Installers
4246 Cement Masons
4254 Carpenters
4264 Bricklayers
4274 Plumbers
4276 Floor Layers
4278 Roofers
4286 Construction Laborers
4288 Railroad Laborers

43 FOOD PRODUCTS OCCUPATIONS

4324 Bakers
4326 Meat Cutters
4328 Commercial Fishermen
4348 Cannery Workers

44 TEXTILE AND APPAREL OCCUPATIONS

(Textile Manufacturing)

4424 Textile Machine Operators

(Apparel Manufacturing)

4442 Clothes Designers-Patternmakers
4446 Seamstresses and Tailors
4448 Sewing Machine Operators

(Laundry)

4464 Laundry & Dry Cleaning Workers

(Other)

4494 Upholsterers
4496 Shoe Repairers

45 TIMBER PRODUCTS OCCUPATIONS

4514 Fallers and Buckers
4516 Chokersetters

(Sawmill and Plywood)

4522 Sawmill Log Handling Occs.
4524 Plywood Log and Block Handlers
4526 Veneer Production Occupations
4528 Planer Mill Occupations
4532 Sawmill Sawing Occupations
4534 Sawmill Drying Occupations
4536 Sawmill Greenchainmen
4538 Lumber Graders and Inspectors
4542 Sawmill Waste Recovery Occs.
4544 Veneer Drying Occupations
4546 Veneer Salvage & Upgrading Occs.
4548 Plywood Lay-Up Occupations
4552 Plywood Finishing Occupations
4554 Plywood Laborers
4556 Woodworking Machine Operators
4559 Sawmill Laborers

45 TIMBER PROD. OCCS. (Cont.)

(Pulp and Paper)

4574 Pulp and Paper Workers

(Furniture)

4586 Cabinetmakers

47 GRAPHIC ARTS OCCUPATIONS

4724 Commercial Artists & Designers
4734 Photographers
4766 Printing Production Occupations

54 METALWORKING OCCUPATIONS

(Refining and Casting)

5421 Metal Refining Occupations
5422 Metalworking Patternmakers
5424 Molders
5426 Foundry Workers

(Machining)

5462 Tool and Die Makers
5464 Machinists
5468 Saw Filers and Tool Sharpeners
5472 Machine Tool Operators

(Metal Joining and Fabricating)

5482 Welders
5483 Structural Metal & Boiler Makers
5484 Sheet Metal Workers
5486 Body and Fender Repairers
5488 Blacksmith & Forge Shop Workers

56 ELECTRICITY & ELECTRONICS OCCS.

(Electricity)

5624 Linemen
5626 Electricians & Elect. Repairers

(Electronics, Technical)

5664 Broadcast Technicians

56 ELEC. & ELEC. OCCS. (Cont.)

(Electronics, Manufacturing)

5686 Electronics Assemblers

59 OTHER PRODUCTION OCCUPATIONS

5914 Petroleum Processing Occs.
5918 Rubber & Chemical Process Occs.
5924 Rubber & Plastics Fabricators
5926 Production Painters & Finishers
5944 Boiler Operators
5946 Sewage Plant Operators
5966 Production Assemblers
5982 Handcrafters

61 TRANSPORTATION OCCUPATIONS

(Managerial and Technical)

6126 Air Traffic Controllers
6128 Railroad Conductors

(Transportation Equipment Operators)

6142 Bus and Taxi Drivers
6144 Truck Drivers
6152 Bulldozer Operators
6154 Operating Engineers
6156 Yarding and Loading Occupations
6158 Forklift Operators

(Other)

6172 Railroad Engineers
6174 Railroad Brakemen and Switchmen
6184 Ship Officers and Engineers
6188 Pilots and Flight Engineers

71 STOCK CONTROL OCCUPATIONS

7112 Car Loaders
7114 Warehousemen
7116 Shipping and Receiving Clerks
7118 Stock Clerks
7122 Mail Carriers
7124 Newspaper Carriers
7126 Packers and Wrappers
7134 Grocery Baggers
7164 Librarians
7166 Library Assistants

74 SALES OCCUPATIONS

7414 Commercial Salespeople
7415 Securities Salespeople
7416 Insurance Salespeople
7417 Real Estate Salespeople
7418 Automobile Salespeople
7422 Business Services Salespeople
7434 Route Salespeople
7454 Salespersons
7484 Sales Clerks

78 FOOD SERVICE OCCUPATIONS

(Cooking)

7824 Chefs and Dinner Cooks
7826 Fry Cooks

(Serving)

7852 Bartenders
7854 Waiters and Waitresses
7856 Flight Attendants

(Clean-up)

7884 Kitchen Helpers
7888 Bus Boys

81 HEALTH SERVICE OCCUPATIONS

(Administrative, Diagnosis)

8112 Physicians
8113 Dentists
8114 Veterinarians
8115 Optometrists
8116 Dietitians
8117 Physician's Assistants

(Treatment)

8122 Chiropractors
8124 Pharmacists
8126 Health Therapists
8128 Speech Pathologists/Audiologists

(Nursing)

8162 Registered Nurses
8164 Licensed Practical Nurses
8166 Nurse Aides and Orderlies

81 HEALTH SERVICE OCCS. (Cont.)

(Other)

8168 Emergency Medical Technicians
8174 Dental Hygienists
8176 Dental Assistants
8182 Morticians
8184 Barbers
8186 Cosmetologists

84 SOCIAL SERVICE OCCUPATIONS

(Guidance)

8414 Counselors
8416 Caseworkers
8418 Psychologists
8424 Social Service Specialists
8428 Social Service Aides
8432 Lawyers
8433 Legal Assistants
8436 Clergy

(Education)

8454 University and College Teachers
8456 Elementary and Secondary Teachers
8458 Education Program Specialists
8459 Child Care Workers

(Recreation)

8482 Recreation Program Directors
8486 Recreation Leaders
8488 Recreation Aides

94 PROTECTIVE SERVICE OCCUPATIONS

9414 Law Enforcement Officers
9426 Fire Fighters
9436 Military Enlisted Personnel
94364 Navy Enlisted Personnel
9476 Security Guards

98 ART AND ENTERTAINMENT OCCS.

9824 Radio and Television Announcers
9842 Models
9866 Performing Artists
9868 Professional Athletes